

September 1998

4WD-RCRA

SUBJ: Evaluation of Northrop Grumman's status under the RCRIS Corrective Action
Environmental Indicator Event Codes (CA725 and CA750)
EPA I.D. Number: MSD 008 186 587

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I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Northrop Grumman's status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Information System (RCRIS):

- 1) Human Exposures Controlled Determination (CA725),
- 2) Groundwater Releases Controlled Determination (CA750).

Concurrence by the RCRA Enforcement and Compliance Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing above. See Memo Attachment 1 for more specific information of the RCRIS definitions for CA725 and CA750.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE

FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the first evaluation performed by EPA for Northrop Grumman. The evaluation, and associated interpretations and conclusions on contamination, exposures and contaminant migration at the facility, is based on information obtained from the following documents:

- the February 1998 Seventh Annual Groundwater Assessment Program Report For Northrop Grumman Corporation Plant 77;
- the January 12, 1990 Administrative Order on Consent, Docket No. 89-27-R;
- the September 25, 1997 Final Administrative Order on Consent, Docket No. 89-27-R;
- the August 8, 1997 Final Decision and Response to Comments; and
- the December 1995 Final Corrective Measures Study Report.

III. FACILITY SUMMARY

Northrop Grumman Corporation, formerly Grumman Aerospace Corporation, operates a manufacturing plant for aircraft parts and sub-assemblies (Plant 77) on property known as Witham Field, which is leased from Martin County in Stuart, Florida (see attached Site Location Map, Figure 1). The land is zoned as "general institutional" according to Martin County. This includes commercial and industrial uses, public and not-for-profit, such as schools, government buildings and hospitals. From 1950 to 1994 Grumman also operated the rest of the property as an airport.

Manufacturing operations involve the use of chemicals now considered to be hazardous and the subsequent generation and storage of hazardous wastes. The facility is undergoing corrective action pursuant to the Resource Conservation and Recovery Act (RCRA) to mitigate contamination caused by the release of hazardous constituents from the facility to the environment. EPA issued an Administrative Order in October 1989, pursuant to Section 3008(h) of RCRA. The order identified a release of hazardous constituents from operations at the facility and required the facility to conduct corrective action activities at Solid Waste Management Units (SWMUs) identified on the property. A consent order for the facility became effective in January 1990. In October 1990, Grumman signed a consent order with the State of Florida to conduct corrective action of groundwater beneath or near Plant 77.

From 1992 to 1995, Northrop Grumman Corporation conducted a RCRA Facility Investigation (RFI), the purpose of which was to identify releases of hazardous constituents at the facility and determine the extent of these releases. In 1995, Northrop Grumman prepared a Corrective Measures Study (CMS), which evaluated options for corrective action to address the hazardous constituents identified during the RFI. In October 1991, the facility began an interim measure at SWMU 5. Clean closure of SWMU 5, a surface impoundment that stored F019 sludges from 1979 through 1983, was approved on August 10, 1987. The Interim Corrective Measure (ICM) System consists of seven (7) recovery wells (RW-1 through RW-5, CSW-20 and CSW-21) positioned in the central portion of the plant and a treatment system consisting of two

(2) air stripping towers situated in the northwest corner of the plant. The ICM System continuously withdraws approximately 1.2 million gallons per day of groundwater containing VOCs and conveys the water for treatment to the air stripping towers and ultimately to the City of Stuart raw water main for further treatment. During operation of the ICM System, depth to groundwater can range between about three (3) and twenty-three (23) feet below grade. Groundwater flow direction at the facility is towards the ICM recovery wells.

Northrop Grumman currently operates as a large quantity generator. Hazardous wastes are temporarily stored at the Industrial Wastewater Treatment Building, the Liquid Chemical Waste Storage Building, and the Container Storage Building.

**IV. CONCLUSION FOR CA725
(Human Exposures Controlled Determination): YE**

GROUNDWATER

Groundwater and soil are contaminated onsite and plausible onsite and offsite human exposures are controlled. As more fully discussed in Memorandum Attachment 2, the ICM Pump and Treat System for the intermediate and deeper zones of the surficial aquifer at SWMU 5 and south of SWMU 5 and an air sparge system for the surficial aquifer at SWMU 4, are controlling human exposures to unacceptable groundwater contamination. Also, as more fully discussed in Memorandum Attachment 2, exposures to contaminated soils are controlled by a cap. Therefore, plausible human exposures are controlled and it is recommended that CA725 YE be entered into RCRIS as of September 30, 1998.

Memorandum Attachment 2 explains the groundwater control systems and the cap in detail and also further explains these conclusions.

**V. CONCLUSION FOR CA750
(Groundwater Releases Controlled Determination): YE**

Groundwater contamination exists at this facility and the releases are controlled as further discussed in Memorandum Attachment 2. The groundwater is contaminated at concentrations above Florida maximum contaminant levels (MCLs) by releases from SWMUs. There are control measures present at the facility which control the physical migration of contaminated groundwater beyond the facility property line. Therefore, it is recommended that CA750 YE be entered into RCRIS as of September 30, 1998.

VI. SUMMARY OF FOLLOW-UP ACTIONS

Currently, the facility is implementing corrective measures at SWMUs 4 and 5 under the final 3008(h) Order. These measures include the ICM System and the air sparge system to treat groundwater and the maintenance of the cap for the asbestos tiles at SWMU 4. Once MCLs are met or exceeded, the facility will submit a Corrective Measures Completion Report for EPA's approval.

MEMORANDUM ATTACHMENT 1

A. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are five (5) national status codes under CA725. These status codes are:

- | | | |
|----|----|---|
| 1) | YE | Yes, applicable as of this date [i.e., human exposures are controlled as of this date]. |
| 2) | NA | Previous determination no longer applicable as of this date. |
| 3) | NC | No control measures necessary. |
| 4) | NO | Facility does not meet definition [i.e., human exposures are not controlled as of this date]. |
| 5) | IN | More information needed. |

The first three (3) status codes listed above were defined in January 1995 Data Element Dictionary for RCRIS. The last two (2) status codes were defined in June 1997 Data Element Dictionary.

Note that CA725 is designed to measure human exposures over the entire facility (i.e., the code does not track SWMU specific actions or success). Every area at the facility must meet the definition before a YE or NC status code can be entered for CA725. The NO status code should be entered if there are current unacceptable risks to humans due to releases of hazardous wastes or hazardous constituents from any SWMU(s) or AOC(s). The IN status code is designed to cover those cases where insufficient information is available to make an informed decision on whether or not human exposures are controlled. If an evaluation determines that there are both unacceptable and uncontrolled current risks to humans at the facility (NO) along with insufficient information on contamination or exposures at the facility (IN), then the priority for the EI recommendation is the NO status code.

In Region 4's opinion, the previous relevance of NA as a meaningful status code is eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN to the existing YE and NC status codes. In other words, YE, NC, NO and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA725. Therefore, it is Region 4's opinion that only YE, NC, NO and IN should be utilized to categorize a facility for CA725. No facility in Region 4 should carry a NA status code.

B. GROUNDWATER RELEASES CONTROLLED

DETERMINATION (CA750)

There are five (5) status codes listed under CA750:

- 1) YE Yes, applicable as of this date [i.e., groundwater releases are controlled as of this date].
- 2) NA Previous determination no longer applicable as of this date.
- 3) NR No releases to groundwater.
- 4) NO Facility does not meet definition [i.e., groundwater releases are not controlled as of this date].
- 5) IN More information needed.

The first three (3) status codes listed above were defined in January 1995 Data Element Dictionary for RCRIS. The last two (2) status codes were defined in June 1997 Data Element Dictionary.

The status codes for CA750 are designed to measure the adequacy of actively (e.g., pump and treat) or passively (e.g., natural attenuation) controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.) is the point where the success or failure of controlling the migration of hazardous constituents is measured for active control systems. **Every contaminated area at the facility must be evaluated and found to have the migration of contaminated groundwater controlled before a "YE" status code can be entered.**

If contaminated groundwater is not controlled in any area(s) of the facility, the NO status code should be entered. If there is not enough information at certain areas to make an informed decision as to whether groundwater releases are controlled, then the IN status code should be entered. If an evaluation determines that there are both uncontrolled groundwater releases for certain units/areas (NO) and insufficient information at certain units/areas of groundwater contamination (IN), then the priority for the EI recommendation should be the NO status code.

In Region 4's opinion, the previous relevance of NA as a meaningful status code is eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN to the existing

YE and NR status codes. In other words, YE, NR, NO and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA750. Therefore, it is Region 4's opinion that only YE, NR, NO and IN should be utilized to categorize a facility for CA725. No facility in Region 4 should carry a NA status code.

MEMORANDUM ATTACHMENT 2

APPLICABLE CA 725 MEDIA BY MEDIA DISCUSSION

3 of 3 - Memorandum Attachment 1

OF CONTAMINATION AND THE STATUS OF PLAUSIBLE HUMAN EXPOSURES

The facility is located on Witham Field. SWMU 4 (the Former Aboveground Training Platform) is actually located on the landing strip, which is not accessible to the public, and employee exposure would be limited to maintaining the air sparge system and the cap covering the buried asbestos tiles. The plumes located at SWMU 5 (the Closed Surface Impoundment) are located either below asphalt parking lots or buildings. Employee exposure would be limited to maintaining the wells and the air strippers. This evaluation relies on the analytical data found in the Seventh Annual Groundwater Monitoring Report.

GROUNDWATER

Groundwater is contaminated onsite and plausible onsite and offsite human exposures are controlled by the Interim Corrective Measures (ICM) System for the intermediate and deep zones of the shallow aquifer at SWMU 5 and the air sparge system for the surficial zone of the shallow aquifer at SWMU 4. The plumes at the facility are well within the facility boundaries.

The groundwater at this Facility was found to contain volatile organic compounds (VOCs) above MCLs during a Florida Department of Environmental Regulation (FDER) site investigation in the summer of 1988. A three-phase RCRA Facility Investigation required by the EPA

January 12, 1990 Administrative Order on Consent went on to determine the extent of the VOC contamination found in the groundwater at this site. This contamination is at concentrations above Florida MCLs. Sources were never identified. However, VOCs have not been detected in the groundwater above the defined plumes at either SWMU 4 or SWMU 5 since groundwater sampling and analysis began in 1991. There are three groundwater plumes found at this facility. One of these plumes occurs in the surficial zone of the shallow aquifer at SWMU 4. The remaining two occur in the intermediate and deep zones of the shallow aquifer near SWMU 5. These two plumes are referred to as the "North Plume" and the "South Plume." Please see the figures in Attachment 3 for clarification of the plumes found at this facility.

North Plume at SWMU 5

The north plume occurs at depths ranging between 40 and 120 feet below ground surface. This plume is currently contaminated with trichloroethane, cis/trans 1,2-dichloroethane, and benzene above Florida mcls (200 µg/l for trichlorethane, 70 µg/l for cis/trans 1,2-dichloroethane and 1 µg/l for benzene). The additional constituents detected include 1,1-dicloroethene and 1,1-dichloroethane. VOCs have not been detected in the shallow groundwater in this area. Analysis of groundwater samples taken in June 1997 and December 1997 show that the greatest concentrations of VOCs occur between 75 and 95 feet below ground surface. These concentrations decreased between these sampling events. Currently, the cross-section of this plume is approximately 55 feet by 700 feet.

South Plume at SWMU 5

The south plume occurs at depths ranging between 42 and 122 feet below ground surface. This plume is currently contaminated with trichloroethene, vinyl chloride and benzene above Florida mcls (3 µg/l for trichloroethene, 2 µg/l for vinyl chloride and 1 µg/l for benzene). The additional VOCs detected include cis/trans 1,2-dichloroethene, 1,1-dichloroethane, xylenes, and toluene. VOCs have not been detected in the shallow groundwater in this area. Analysis of groundwater samples taken in June 1997 and December 1997 show that the greatest concentrations of VOCs occur at 37.5 to 60 feet below ground surface. These concentrations decreased between these sampling events. Currently, the cross-section of this plume is approximately 100 feet by 800 feet.

SWMU 4

The plume at SWMU 4 occurs within the first twelve feet of the shallow aquifer. Contamination was first detected above Florida MCLs in June 1995. VOCs detected above mcls were trichloroethene and cis/trans-1,2-dichloroethene (70 µg/l for cis/trans 1,2-dichloroethene and 3 µg/l for trichloroethene). Currently, the cross-section of this plume is approximately 210 feet by 290 feet. The air sparge system began operation in January 1998.

There are plausible onsite and offsite human exposures to the groundwater contamination at the north and south plumes. This intermediate and deep zones of the shallow aquifer are a drinking water resource for the City of Stuart. Based on a well inventory, three (3) private water supply wells are located near the facility. Two (2) of these wells are west of Dixie Highway, which borders the facility. These wells have not been impacted. The third private well is just east of Dixie Highway at the Airport Business Park. This well was abandoned and is no longer in use. There are several public water supply wells located at Witham Field. The nearest known public drinking water supply well currently operating is the City of Stuart Supply Well (CSW) 15, located approximately 1,300 feet northwest of the plant. In 1987, VOCs were detected in groundwater from drinking water wells providing water to residents of Martin County. Five (5) public drinking water supply wells, CSW 17 through 21, were found to be impacted and were forced to close.

The ICM system has been operating since 1991. This system removes the VOCs from the groundwater with an air stripper before conveying the treated water to the City of Stuart raw-water collection system. The Corrective Measures Study determined that completion of clean-up of this aquifer could occur more quickly if another recovery well was put in place. The application for construction of the expansion of the additional well at the ICM was submitted to the FDEP Drinking Water Section, Southeast District, on October 3, 1997. After several submittals Northrop Grumman requested both a waiver of and variance from two (2) FDEP Rules specifically cited by the FDEP in a request for information. This request was submitted on March 10, 1998. Currently, this well is in place and Northrop Grumman is waiting for FDEP's response prior to operating the new

well (Recovery Well No. Six). The current ICM system has effectively treated the groundwater before conveyance to the City of Stuart and has controlled the plume.

There are no current plausible onsite or offsite human exposures to the groundwater contamination in the surficial zone of the shallow aquifer at SWMU 4.

Based on the above discussion, plausible human exposures to groundwater contamination are controlled.

SOIL

Soil is contaminated, and cleanup standards are met to the point of controlling all plausible human exposures. The soil at this facility was found to contain arsenic during the three phase RCRA Facility Investigation. These levels were above residential numbers (.8 mg/kg) at SWMU 9 (Former Sewage Treatment Plant) and SWMU 11 (Former Eastern Drainage Ditch) . The final remedy required that contaminated soil be removed. Approximately 319 tons of soil was removed from SWMUs 9 and 11 and shipped offsite. Confirmatory sampling was performed and confirmed that all contaminated soil containing arsenic above .8 mg/kg was removed.

Buried asbestos tiles were found at SWMU 4. This area is approximately 200 square feet. The final remedy selected was to leave the tiles in place. These tiles will not pose a risk to human health or the environment if they are buried, and rather than create an airborne hazard, the facility left these tiles in place and put a cap in place that meets the requirements at 40 C.F.R. 61.151.

Based on the above discussion, human exposures to contaminated soil are controlled.

OPTION	Media				STATUS CODE IF ALL MEDIA FALL UNDER THE SAME OPTION	STATUS CODE FOR SPECIFIC FACILITY
	Ground water	Surface Water	Soil Sediment	Air		
1. Media not contaminated ¹					NC	
2. The media is contaminated and cleanup standards met to the point of controlling plausible human exposures			X		YE (1A)	
3. The media is contaminated [onsite and/or offsite] and all plausible [onsite and/or offsite] human exposures are controlled by [Stabilization/IM and/or Access Controls] ²	X				YE (1B)	
4. The media is contaminated [onsite and/or offsite] and some plausible human exposures are not controlled ³					NO	
5. A decision on human exposures to contamination cannot be made because there is insufficient information on media quality ³					IN	
6. A decision on human exposures to contamination cannot be made because there is insufficient information on plausible human exposures ³					IN	

FOOTNOTES:

¹ If there is not enough concrete information available for an easy determination as to whether or not a medium is contaminated, then, a judgement must be made as to whether or not contamination can be reasonably expected given the site-specific nature of facility's operational history. If a reasonable assumption on contamination cannot be made for every environmental media, then a CA725 determination cannot be made.

² Stabilization/Interim Measures and/or Access Controls which account for all exposures in all media at the facility will be covered under this option. In addition to fences, soil covers, etc., Access Controls can include those specific cases where human exposures to onsite contamination are restricted due to a lack of human receptors (e.g., the groundwater is contaminated but there are no onsite drinking water wells and the facility recognizes that drinking water wells should not be installed). With regard to contamination that has migrated offsite, plausible human exposures cannot be considered controlled unless tangible control measures have been implemented to prevent human exposure to the offsite contamination.

³ If an evaluation determines that there are both unacceptable current risks to humans for certain media (NO) and insufficient information for certain media (IN), then the priority for the EI recommendation should be the NO status code.

**MEMORANDUM ATTACHMENT 3 -
FACILITY MAPS**